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User's Manual

PuriCare® Dual Sided Biosafety Cabinets

Models

3230000
386000021151
3230020
3230001
3230021

To receive important product updates,
complete your product registration card
online at register.labconco.com

Please read the User's Manual before operating the equipment.

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PuriCare® Dual Sided Biosafety Cabinets carry a three-year warranty from date of installation or four years from date of shipment from Labconco, whichever is sooner. Warranty is non-transferable and only applies to the owner (organization) of record.

Buyer is exclusively responsible for the set-up, installation, verification, decontamination or calibration of equipment. This limited warranty covers parts and labor, but not transportation and insurance charges. If the failure is determined to be covered under this warranty, the dealer or Labconco Corporation will authorize repair or replacement of all defective parts to restore the unit to operation. Repairs may be completed by 3rd party service agents approved by Labconco Corporation. Labconco Corporation reserves the rights to limit this warranty based on a service agent's travel, working hours, the site's entry restrictions and unobstructed access to serviceable components of the product.

Under no circumstances shall Labconco Corporation be liable for indirect, consequential, or special damages of any kind. This warranty is exclusive and in lieu of all other warranties whether oral, or implied.

Returned or Damaged Goods

Do not return goods without the prior authorization from Labconco. Unauthorized returns will not be accepted. If your shipment was damaged in transit, you must file a claim directly with the freight carrier. Labconco Corporation and its dealers are not responsible for shipping damages.

The United States Interstate Commerce Commission rules require that claims be filed with the delivery carrier within fifteen (15) days of delivery.

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The disposal and/or emission of substances used in connection with this equipment may be governed by various federal, state, or local regulations. All users of this equipment are required to become familiar with any regulations that apply in the user's area concerning the dumping of waste materials in or upon water, land, or air and to comply with such regulations. Labconco Corporation is held harmless with respect to user's compliance with such regulations.

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If you have questions that are not addressed in this manual, or if you need technical assistance, contact Labconco's Customer Service Department or Labconco's Product Service Department at 1-800-821-5525 or 1-816-333-8811, between the hours of 7:30 a.m. and 5:30 p.m., Central Standard Time.

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Chapter 1: Introduction

Congratulations on your purchase of a Labconco PuriCare Dual Sided Biosafety Cabinet. Your PuriCare product is designed to protect you and your laboratory environment from airborne particulate contaminants. It is the result of Labconco's years of experience manufacturing laboratory equipment, and users like you suggested many of its features to us.

The PuriCare Dual Sided Biosafety Cabinet offers many unique features to enhance safety, performance and ergonomics. To take full advantage of them, please acquaint yourself with this manual and keep it handy for future reference. If you are unfamiliar with how Dual Sided Biosafety Cabinets operate, please review Chapter 3: *Theory of Operation and Safety Precautions* before you begin working in the unit. Even if you are an experienced user, please review Chapter 4: *Using Your PuriCare Dual Sided Biosafety Cabinet*; it describes its features so that you can use the cabinet efficiently.

Chapter 2: Prerequisites

Before you install your cabinet, you need to prepare your site for installation. Carefully examine the location where you intend to install your cabinet. You must be certain that the area is level and of solid construction. In addition, a dedicated source of electrical power must be located near the installation site.

Carefully read this chapter to learn:

- The location requirements.
- The electrical power requirements.
- The exhaust requirements.
- The space requirements.
- How to unpack and move your PuriCare.
- What's required to set up the cabinet?
- How to connect the electrical supply source.
- About initial certification.

Location Requirements

The PuriCare Dual Sided Biosafety Cabinet is designed for installation through an opening in the wall between two separate rooms. Both faces of the cabinet should be away from traffic patterns, doors, fans, ventilation registers, fume hoods and any other air-handling device that could disrupt its airflow patterns. All windows in the room should be closed. Figure 2-1 shows the optimum location for the cabinet.

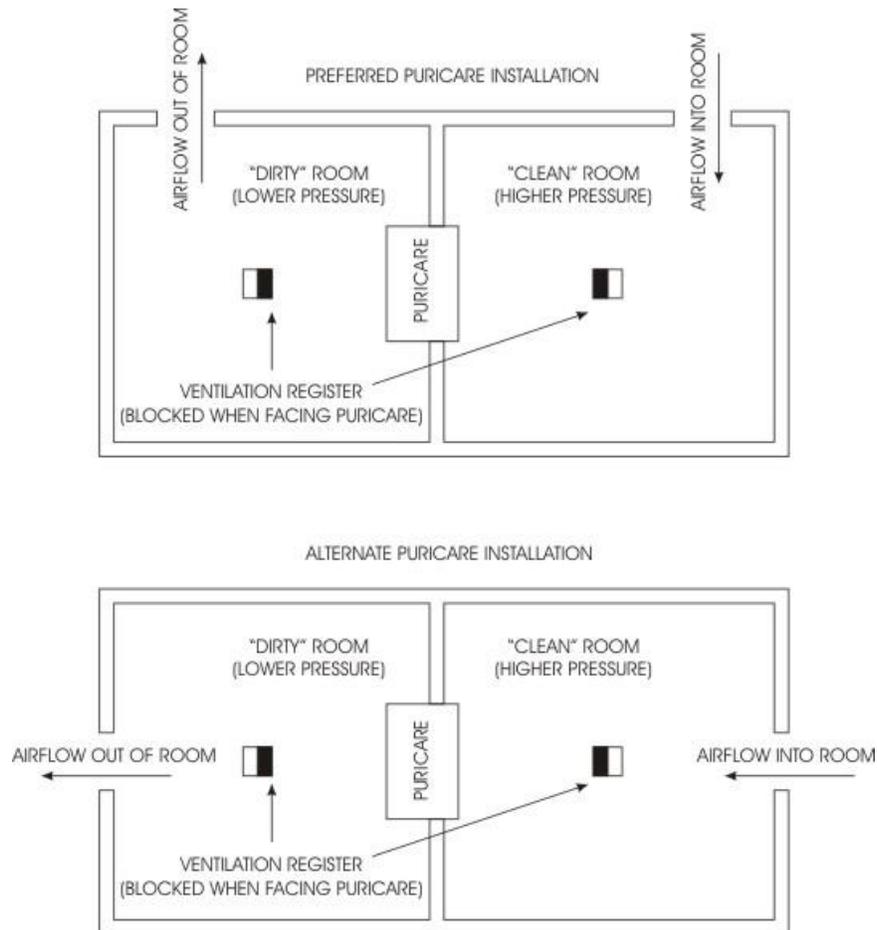


Figure 2-1

Flooring Requirements

The cabinet is designed to sit directly on the floor of the rooms. The flooring for both rooms should be:

- Level
- Nonporous
- Capable of supporting the weight of the cabinet plus equipment. (1000lbs, 454kg)

Wall Requirements-Work Surface Height of 36"

The cabinet is designed for installation through a wall constructed of standard 2" x 4" studs, and covered on both sides with commercial sheetrock or water resistant gypsum board. The opening in the wall required to install the Dual Access Cabinet must measure between 61.5 and 62.5 inches wide and 91 to 96 inches tall. All surfaces of the opening should be finished and painted before installation begins.

Panels and angles that seal the cabinet to the wall extend from floor to 102 inches. Baseboards or poured epoxy floors should accommodate the stainless steel angles. If there are any obstructions or protruding/coved corner baseboards, the sealing angles may require modifications. This is the responsibility of the installer.

Wall Requirements-Work Surface Height of 41"

Note: to complete this installation, you will need the optional Riser Installation Accessory, Part # 3238000

The cabinet is designed for installation through a wall constructed of standard 2" x 4" studs, and covered on both sides with commercial sheetrock or water resistant gypsum board. The opening in the wall required to install the Dual Access Cabinet must measure between 61.5 and 62.5 inches wide and 96 to 101 inches tall. All surfaces of the opening should be finished and painted before installation begins.

Panels and angles that seal the cabinet to the wall extend from floor to 107 inches. Baseboards or poured epoxy floors should accommodate the stainless steel angles. If there are any obstructions or protruding/coved corner baseboards, the sealing angles may require modifications. This is the responsibility of the installer.

Electrical Requirements

The PuriCare Dual Sided Biosafety has the following electrical requirements:

Model #	Requirements
386000021151	115 VAC, 60 Hz, 30 amps
3230000	115 VAC, 60 Hz, 30 amps
3230001	115 VAC, 60 Hz, 30 amps
3230020	230 VAC, 50/60 Hz, 15 amps
3230021	230 VAC, 50/60 Hz, 15 amps

Table 2-1

A dedicated, clearly labeled electrical supply with a circuit breaker rated at the proper amperage should be located near the cabinet.

NOTE: The electrical outlets of the 115 VAC PuriCare are protected by a ground fault interrupter circuit (GFIC). Labconco does not recommend installing a GFIC on the supply to the PuriCare.

Exhaust Requirements

The cabinet has a canopy-style exhaust opening on the top of the unit. Its exhaust duct connection is sized for 12-inch o.d. duct.

NOTE:

MODELS #3230000, 3230020 AND 386000021151 OPERATE WITH BOTH SASHES OPEN AT 12 INCHES, THE EXHAUST FLOW MUST BE CONTROLLED TO EXHAUST 1000 +/- 50 CUBIC FEET PER MINUTE (CFM) THROUGH THE DUCTWORK.

MODELS #3230000 AND 3230020 IF UNIT IS TO BE OPERATED WITH ONE SASH OPEN AT 12 INCHES, THE EXHAUST FLOW MUST BE CONTROLLED TO EXHAUST 500 +/- 50 CUBIC FEET PER MINUTRE (CFM) THROUGH THE DUCTWORK.

For the exact location of the exhaust duct connection, please refer to Appendix B.

Space Requirements

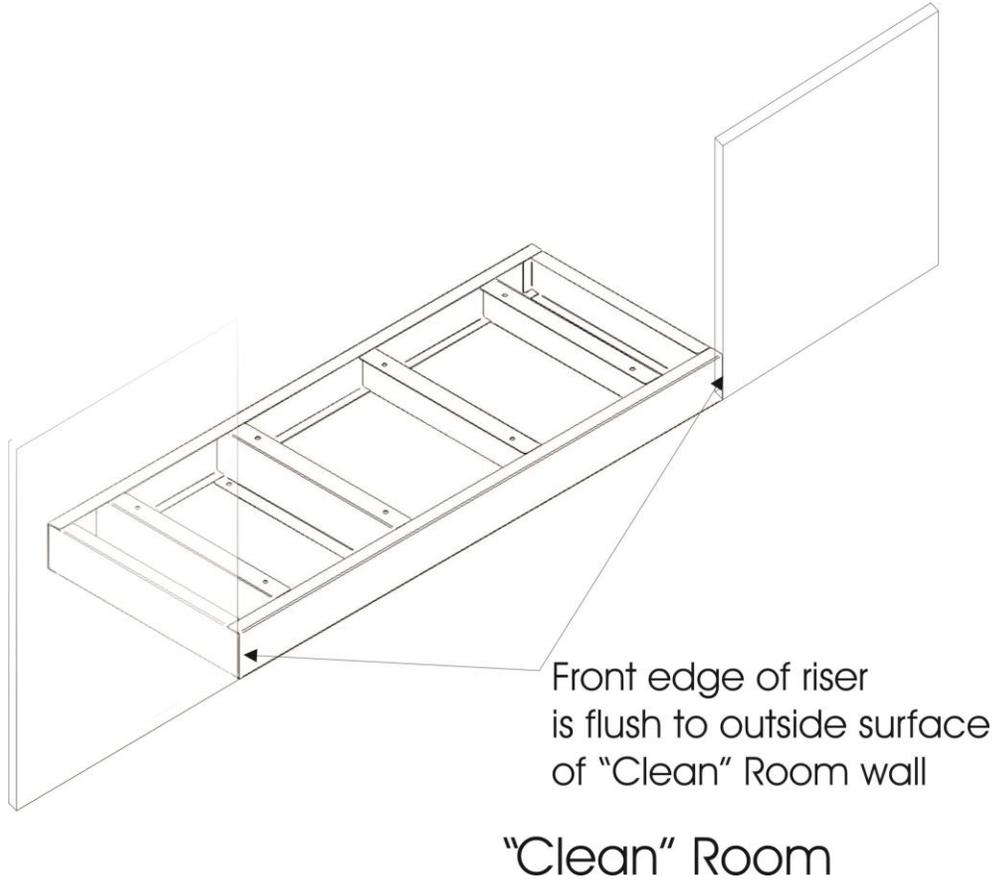
The dimensions for the Dual Sided Biosafety are shown in Appendix B.

Overhead Clearance

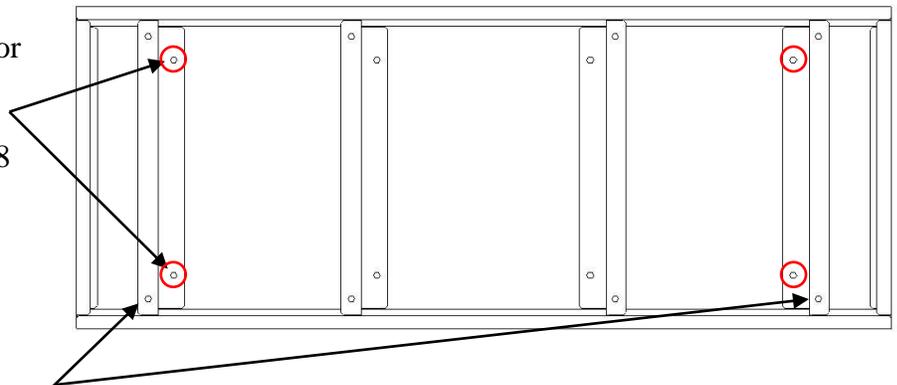
At least 12 inches (300 mm) clearance from any overhead obstructions is required when the unit is in its final operating position.

Installing the Optional Riser (Optional Part # 3238000)

If you choose to use the optional riser to increase the work surface height, install the riser in the location noted. The front of the riser should be installed flush with the outside surface of the wall on the clean side of the installation. The riser can be permanently secured to the floor by using the appropriate anchor or bolt (not supplied).



Secure the riser to the floor by using the appropriate anchors or bolts (not supplied) in any of these 8 locations.



After positioning the cabinet on top of the riser, thread the shipping bolts through the bottom of the cabinet, and then through these 4 holes, for alignment only.

Unpacking Your Dual Sided Biosafety Cabinet

Carefully unpack and inspect it for damage that may have occurred in transit. If your unit is damaged, notify the delivery carrier immediately and retain the entire shipment intact for inspection by the carrier.

NOTE:

The Dual Sided Biosafety cabinet weighs 875 pounds and is top heavy. It should not be tipped during installation.

For installations with work surface height of 36”

Move the cabinet as close to its final installation site before removing it from the wooden pallet. To remove the cabinet from the pallet, reach into the open ends of the pallet with a 1/2" wrench. Four bolts and washers are to be removed and discarded.

It is recommended that the cabinet be removed from the pallet with a pallet jack. Set the pallet jack level with the top of the pallet. Carefully “walk” the cabinet off the pallet and onto the pallet jack. The center of the cabinet will support the weight of the machine.

The cabinet can be lowered to the floor by use of blocks of wood and pry bars. When using pry bars on the underside of the cabinet, keep contact point close to the front edge to prevent deformation of the underside of the machine. Do not pry under the control panels or ends of the cabinet.

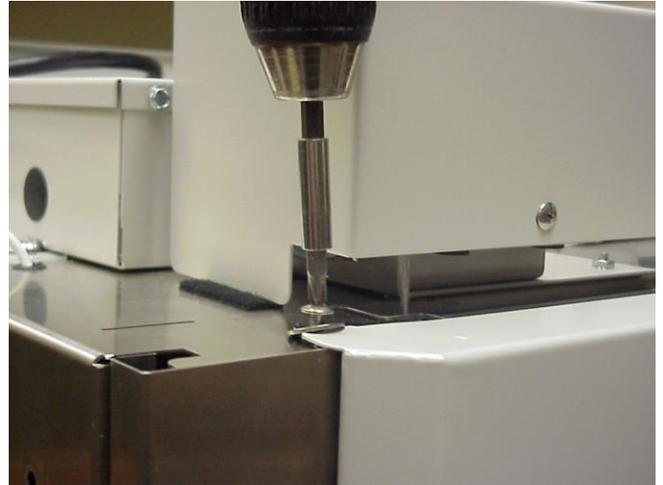
For installations with work surface height of 41”

Move the cabinet as close to the riser as possible before removing it from the wooden pallet. To remove the cabinet from the pallet, reach into the open ends of the pallet with a 1/2" wrench. Four bolts and washers are to be removed. Discard the plates, but retain the bolts for future use. Carefully slide the cabinet from the pallet onto the riser. When properly aligned, thread the bolts back through the bottom of the cabinet. The bolts will go through corresponding holes in the riser, helping to hold the cabinet and riser in alignment.



The sash counter weights have been pinned for shipment to prevent damage to the sashes and cables. To gain access to the sash counterweight the upper front panel and corner panels must be removed.

Remove the upper front panel via two screws and flat washers on the top of the unit. The lower portion of the front panels are hooked to the stainless steel corner panels. Lift the front panel approximately 1" and pull away from the cabinet.



Removing the upper front panel

The corner panels must be removed temporarily to access the sash counterweights. To do this, remove the eight screws along the inside edge of each panel.

Note:

Power must be disconnected from the machine before accessing the interior of the corner panels.

The corner panels are held in place by screws and slots. Lift and rotate the corner panel away from the inside of the machine to separate it from the cabinet.



Accessing the four corner panels

At each of the four corners, reach behind the sash weight track to remove the cotter hitch pin. Once the cotter hitch pin is removed, push the weight support pin toward the front. With the glass sashes fully closed, and the sash cable over the pulley, pull the pin and allow the weight to be supported by the cable. Discard the pins.

Note: The sash weight may be resting on the pin. It may be necessary to have a second person, on a ladder, to pull the sash cable upwards to remove the pin.



Remove the pins supporting the weights for shipments

Reverse the previous steps to replace the front and corner and panels.

Exhaust System Requirements

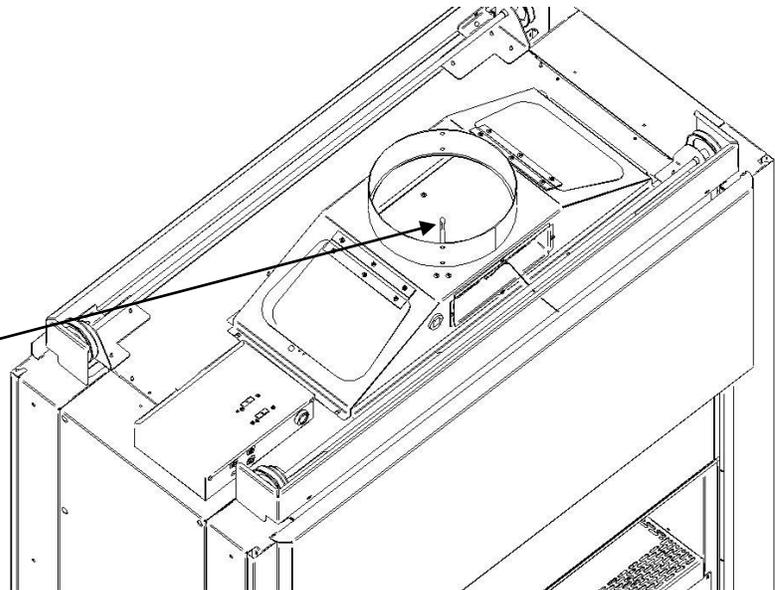
Note: The exhaust connection should be installed by a qualified HVAC contractor.

The exhaust connection on your cabinet has been designed for 12" nominal o.d. pipe to allow for minimum static pressure loss with proper transport velocities away from the hood. Consult Labconco Customer Service should you require help sizing your blower for the exhaust volume and total system static pressure loss. See Chapter 2 for the exhaust requirements specifications.

The selected exhaust duct material should match the local construction codes to ensure compatibility.

Note: The canopy duct connection must not bear the weight of the ductwork above. Duct must be adequately supported throughout its installation.

Note: Remove Airflow sensor cap before installation of the exhaust duct



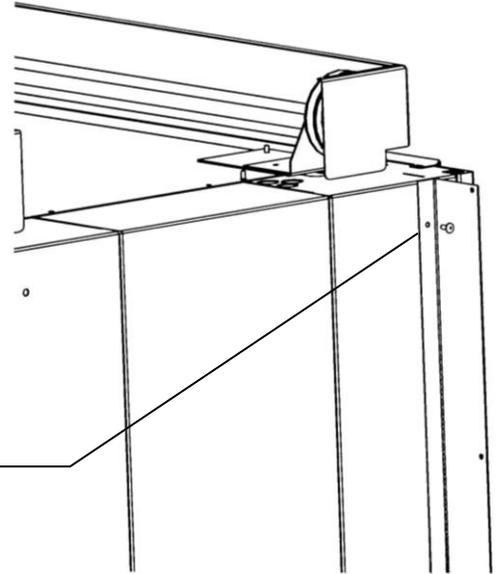
Sealing the PuriCare Dual Sided Biosafety Cabinets to the Wall

Refer to the installation instructions that were attached to your cabinet for specific instructions.

For Through-the-Wall Installations...

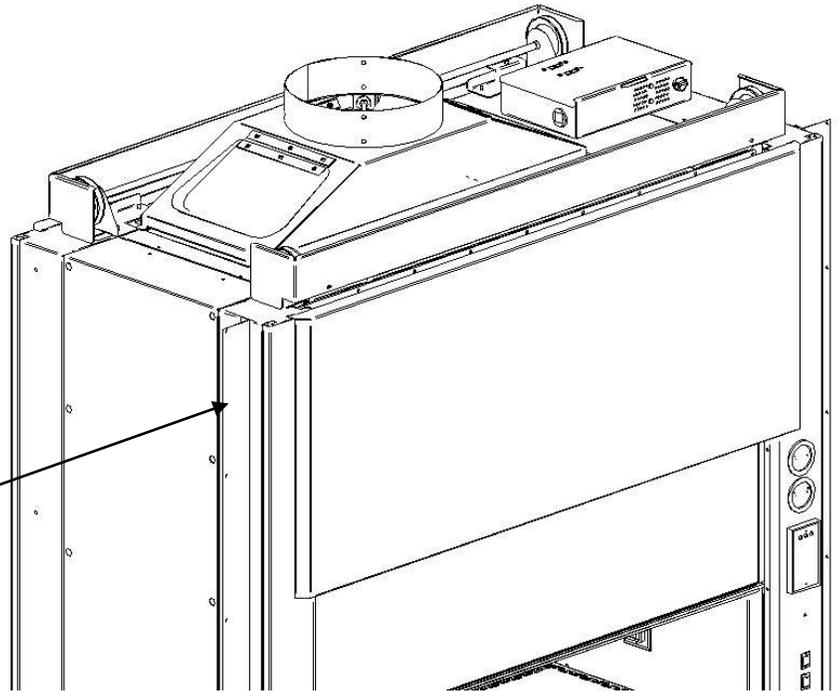
Step 1. Keep the cabinet on wood runners to protect floors while locating the cabinet. Attach the wall-mounting angles to the appropriate sides of the cabinet. Use a 10-24 x .5 truss head screws and locate as shown. These angles will be used to position the cabinet(s) with reference to the wall.

Attach wall-mounting angle with screws.



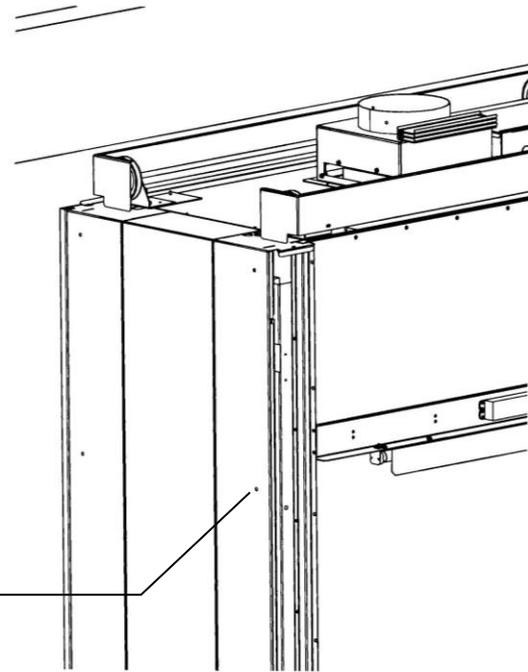
Step 2. Position the cabinet so that it is centered in the wall opening from left to right. Push the cabinet into the wall opening until the wall mounting angle comes in contact with the wall.

Position the wall mounting angle against the wall.



Steps 3 – 7 are for side-by-side (tandem) installations of cabinets only.

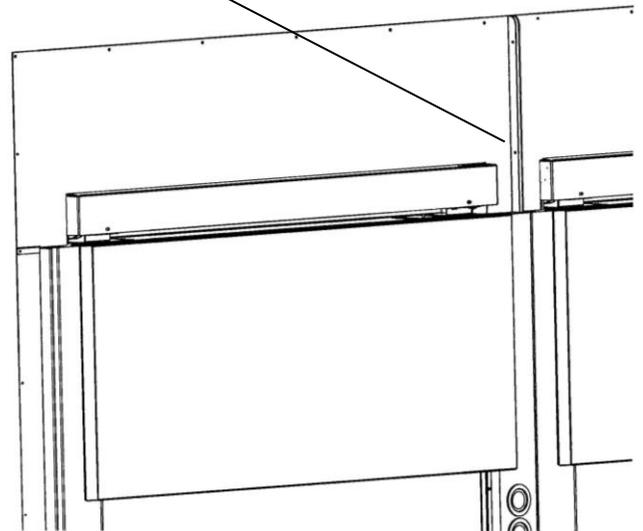
Step 3. Position the two cabinets in their side-by-side arrangement. **DISCONNECT POWER IF SERVICE HAS BEEN CONNECTED.** Temporarily remove the corner cover panels on adjacent corners. Align the holes in the sides of the cabinet. Install three sets of 1/4-20 bolts, flat washers and nylon locking nuts on each side of the machines (6 sets total).



Align holes in adjacent cabinets.

Align upper filler panels with mounting angles. Fasten at the center seam.

Step 4. Install the upper filler panel by aligning the edges of the panel with the wall-mounting angle. Hardware to attach to the wall of the building is to be provided by the installer. For tandem installations, fasten the left and right panels with two sets of 10-24 screws with flat washers on both sides and tighten with an acorn nut.

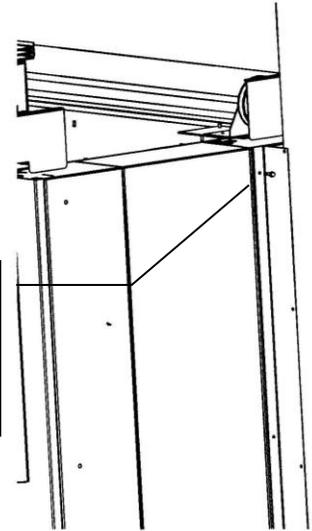


Move to the reverse side of the wall for Steps 5 – 11. To allow for varying wall thickness, the mounting angle on this side is adjustable. Decide if the installation is to have a sealed barrier between rooms. If so, use a silicone sealant or foam gasketed tape to seal the following parts to the wall as well as the cabinet.

Step 5. Position the angle against the wall as shown and drive the 5 self-drilling screws into the side of the cabinet with a 5/16" hex bit.

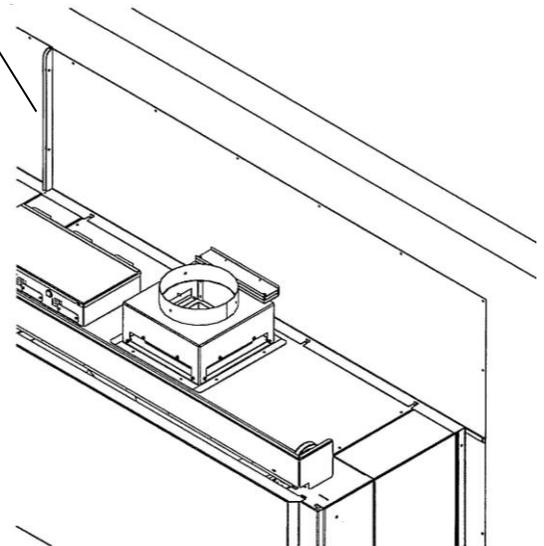
Step 6. Again, use installer supplied hardware to fasten the angle to the wall.

Adjustable wall-mounting angle is attached with self-drilling screws.



Adjustable wall-mounting angle is attached with self-drilling screws.

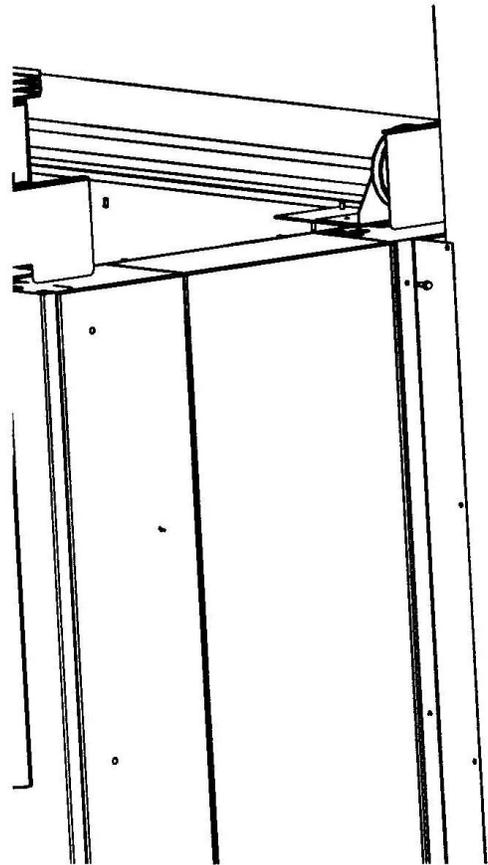
Step 7. The upper filler panel is attached to the cabinet with the nuts and washers provided. Be careful not to over tighten the weld studs on the top of the cabinet. Seal the seams if desired. Installer provides the hardware to fasten the panels to the wall.



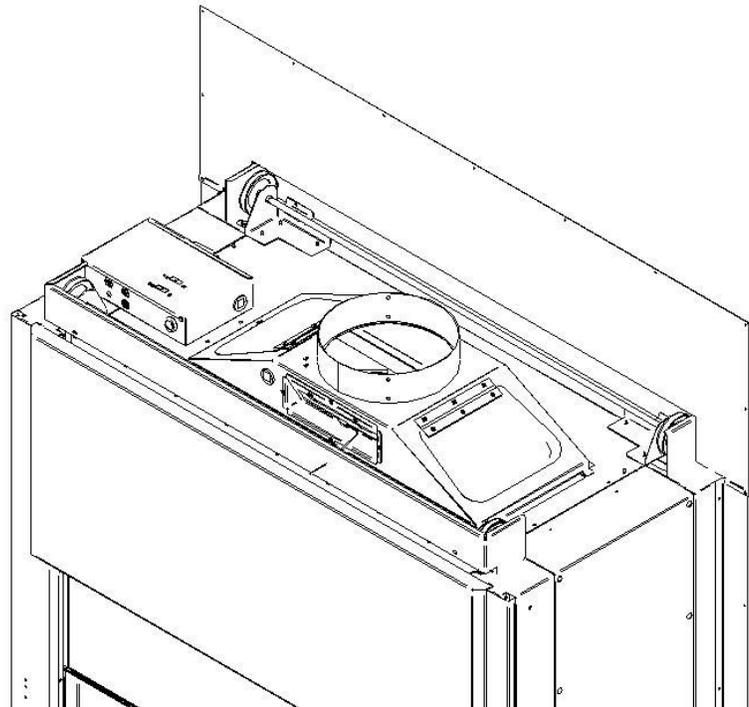
Step 8. (Single cabinet through-the-wall installation continued) To allow for varying wall thickness, the mounting angle on this side of the cabinet is adjustable. Decide if the installation is to have a sealed barrier between rooms. If so, use a silicone sealant or foam gasket tape to seal the following parts to the wall as well as the cabinet.

Position the angle against the wall as shown and drive the five self-drilling screws (included) into the side of the cabinet with a 5/16" hex bit.

Step 9. Use installer supplied hardware to fasten the angle to the wall.



Step 10. The dirty side upper filler panel is attached to the cabinet with the nuts and washers provided. Be careful not to over tighten the weld studs on the top of the cabinet. Seal the seams if desired. Installer must provide the hardware to fasten panels/angles to the wall. The clean side upper filler panel is attached by aligning the two tap holes from each corner (or side) filler panels



Connecting the Electrical Supply to the Dual Sided Biosafety Cabinet

Prior to connecting any electrical wiring to the cabinet structure, refer to the serial number tag on the side of the unit, for the proper electrical requirements of your model.

Note:

The building electrical supply system for PuriCare should include overload protection. A switch or circuit breaker should be in close proximity to the equipment and within easy reach of the operator. The switch or circuit breaker is to be marked as the disconnecting device for the equipment. Consult the NEC-2002 for proper installation.

A qualified electrician connects the electrical supply at the single point junction box. For any troubleshooting refer to Chapter 6.

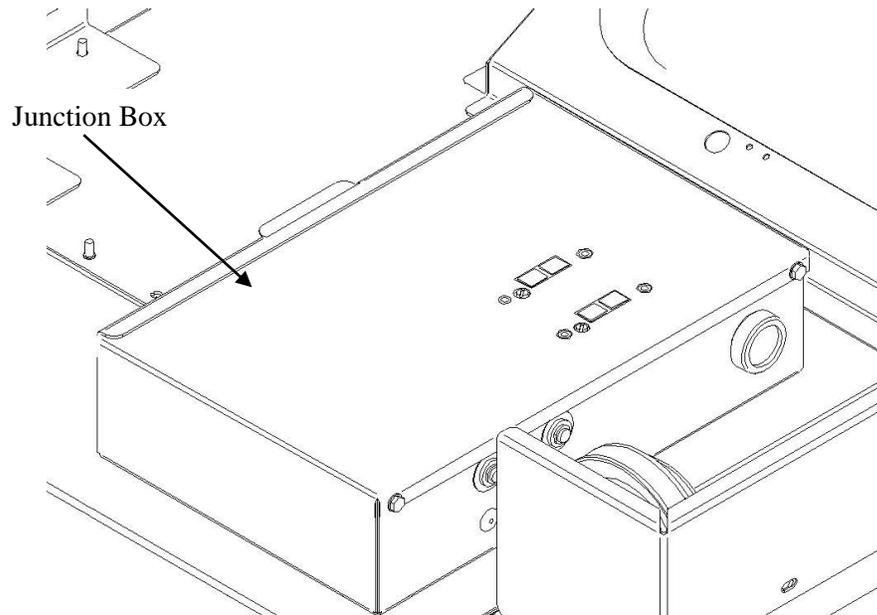


Figure 3-1

NOTE: All wiring for the PuriCare should be performed by a licensed electrician and conform to all local codes. Although equipped with a power cord, in most cases, the cabinet will require the use of shielded conduit to protect the wiring into the unit. The grounding connection shall not be made to the electrical junction box cover.

Initial Certification

Prior to use, a qualified certifier should certify the cabinet. Under normal operating conditions it should be recertified at least annually or when serviced. The certifier should perform the following tests:

- HEPA Filter Leak Tests
- Downflow Velocity Profile Test
- Inflow Volume Test
- Airflow Smoke Patterns

Please refer to Chapter 5 for downflow and inflow velocities and volumes. If you have any questions regarding certification agencies or need assistance in locating one, contact Labconco's Product Service Department at 1-800-522-7658 or 816-333-8811.

Chapter 3: Features and Safety Precautions

The PuriCare Dual Sided Biosafety Cabinet operates using the following principles:

- Filtration and retention of particulates by High Efficiency Particulate Air (HEPA) filters
- Directional airflow

The major components in the cabinet are:

- The HEPA filters
- The motor/blowers to force air through the unit
- Speed controls for the motors
- Cabinet air intakes (grilles)

HEPA Filters

HEPA filters are disposable, dry-type particulate filters. The filter material or media is typically made of borosilicate microfibers that are made into a thin sheet, in a process similar to the production of paper. This sheet is folded, or pleated to increase its surface area. The pleats are held in place by aluminum separators or by beads of glue that add rigidity to the media pack. The media pack is then set into a suitable frame and the perimeter sealed to the filter frame, as shown in Figure 3-1.

Note: The HEPA filter media is very fragile. Do not touch or contact the media surface. If you think the surface of a HEPA filter is damaged, DO NOT USE THE CABINET. Have the HEPA filter integrity tested by a qualified certifier before using the cabinet.

HEPA Filters are only effective against particulate material. Gases will pass through the filter.

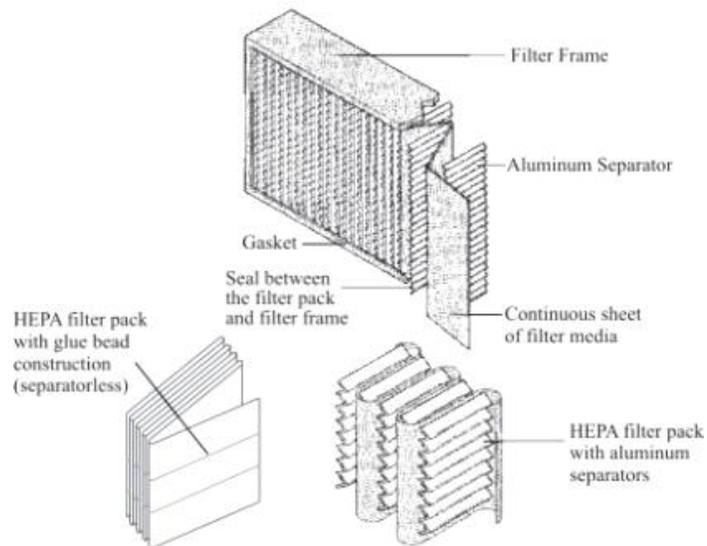


Figure 3-1

Directional Airflow

Directional airflow plays a key role in the cabinet's performance. Sterile, HEPA-filtered air flows downward throughout the work area, protecting the materials inside from external and cross contamination. All of this "supply" air and some room air are drawn into the grilles. These "curtains" of air make it difficult for aerosols to escape out of the work area and into the outside environment.

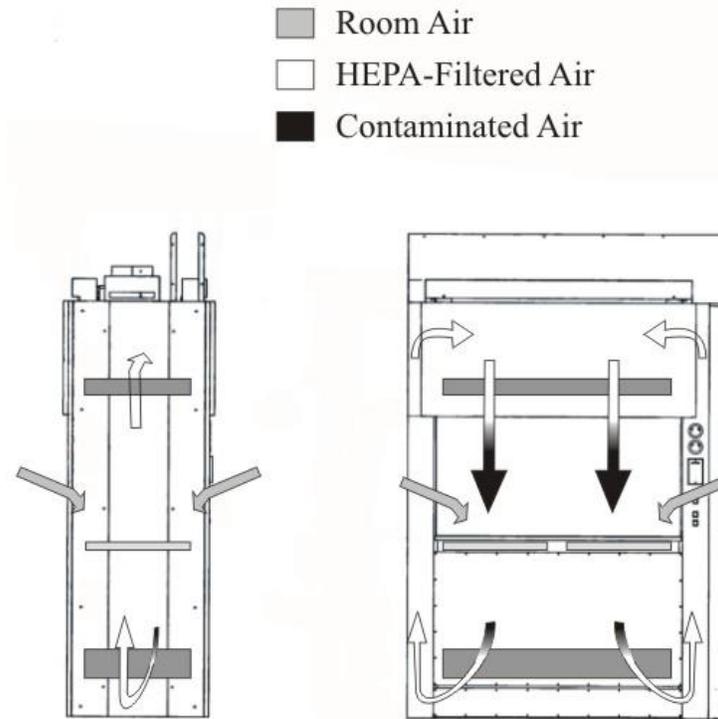


Figure 3-2

Motor/Blowers

The Dual Sided Biosafety Cabinet uses two air-handling systems to direct air through it. In the top of the cabinet an electronically commutated motor (ECM) draws recirculated air from the return ducts, and then forces the air through the upper (supply) HEPA filter. Below the work surface there is a set of prefilters, a heavy-duty ECM-driven blower and the exhaust HEPA filter. After passing through the exhaust HEPA filter the airflows back up the return air ducts where some is exhausted through the top of the unit, and some is recirculated back through the supply HEPA filter.

Speed Controls

Note: Only a qualified certifier should adjust the speed controls.

The speed controls are electronic circuits that allow the certifier to set the speed of the motor or impellers independently by adjusting their voltage. During operation, each controls' digital display will continuously display the speed in RPMs, and the power setting for its respective motor.

Cabinet Air Intakes (Grilles), Ductwork and Air Balance Controls

The cabinet's containment and performance are affected by the location, size, and pattern of the grilles at the front and rear of the work area.

Note: Never block or obstruct the grilles.

The internal ductwork conveys the air from the work area to the lower blower, and then from the lower blower to the upper plenum. In the upper plenum, air either flows to the exhaust outlet, or to the blower and the upper (supply) HEPA filter.

Safety Precautions

The PuriCare Dual Sided Biosafety Cabinet is NOT a fume hood. Do not use this device for the containment or storage of toxic, flammable, or explosive chemicals. If you have questions regarding the operation of this device, contact Labconco at 800-821-5525 or www.labconco.com.

HEPA filters are only effective for the entrapment of particulate matter. Manipulations which generate gases or vapors, i.e., volatile toxic chemicals or radionuclides, should not be performed in this cabinet.

The cabinet should be certified by a qualified certification technician before its initial use. The cabinet should be recertified whenever it is serviced or at least annually thereafter.

Some components of the cabinet should only be serviced by a qualified certification technician. Some internal components of the DALFC may become contaminated with allergenic materials during operation of the unit. Only experienced personnel competent in decontamination procedures should decontaminate the cabinet before servicing contaminated components. If you have any questions regarding certification agencies, or need assistance in locating one, contact Labconco's Product Service Department at 800-522-7658 or 816-333-8811.

Ensure that the unit is connected to electrical service in accordance with local and national electrical codes. Failure to do so may create a fire or electrical hazard. Do not remove or service any electrical components without first disconnecting the machine from electrical service.

An open flame should NOT be used in the cabinet. Open flames may disrupt the airflow patterns in the cabinet, burn the HEPA filter and/or damage the filter's adhesive. Gases under high pressure should not be used in the cabinet, as they may disrupt its airflow patterns.

The HEPA filters will gradually accumulate airborne particulate matter from the room and from work performed in the cabinet. The rate of accumulation will depend upon the cleanliness of the room air, the amount of time the cabinet is operating and the nature of work being done in the unit.

Proper operation of the cabinet depends largely upon its location (see Chapter 2) and the operator's work habits.

When surface disinfecting the cabinet:

- Avoid splashing the disinfecting solution on skin or clothing.
- Ensure adequate ventilation.
- Carefully follow the manufacturer's safety instructions when handling disinfectants and always dispose of disinfecting solutions in accordance with local and national laws.

DO NOT allow disinfectants with free chlorine to contact the stainless steel components for a long period of time. Free chlorine will corrode stainless steel after extended contact.

Chapter 4: Using Your PuriCare Dual Sided Biosafety Cabinet

Operating the Sashes

Because of the counterbalanced anti-racking sash mechanisms, it will take only a few pounds of force to lift the sashes up or down.

1. To start the cabinet:

FOR MODEL #s 3230000, 3230020 AND 386000021151 ensure that both sashes are open. If the “SASH ALARM” LED is illuminated, close down one or both sashes until the alarm ceases. The Blowers and Fluorescent lights can be switched on or off from either control panel.

FOR MODEL #s 3230001 AND 3230021 ensure that only one sash is open. If the “SASH ALARM” LED is illuminated, close down one or both sashes until the alarm ceases. The Blowers and Fluorescent lights can be switched on or off from either control panel.

2. Ensure the exhaust system blower is operating.
3. Turn the blower and light switches on.
4. Let the unit run for approximately two minutes before use to purge the interior of particulate contaminants.

Note: The canopy alarm will sound until the exhaust system blower draws a sufficient volume of air.

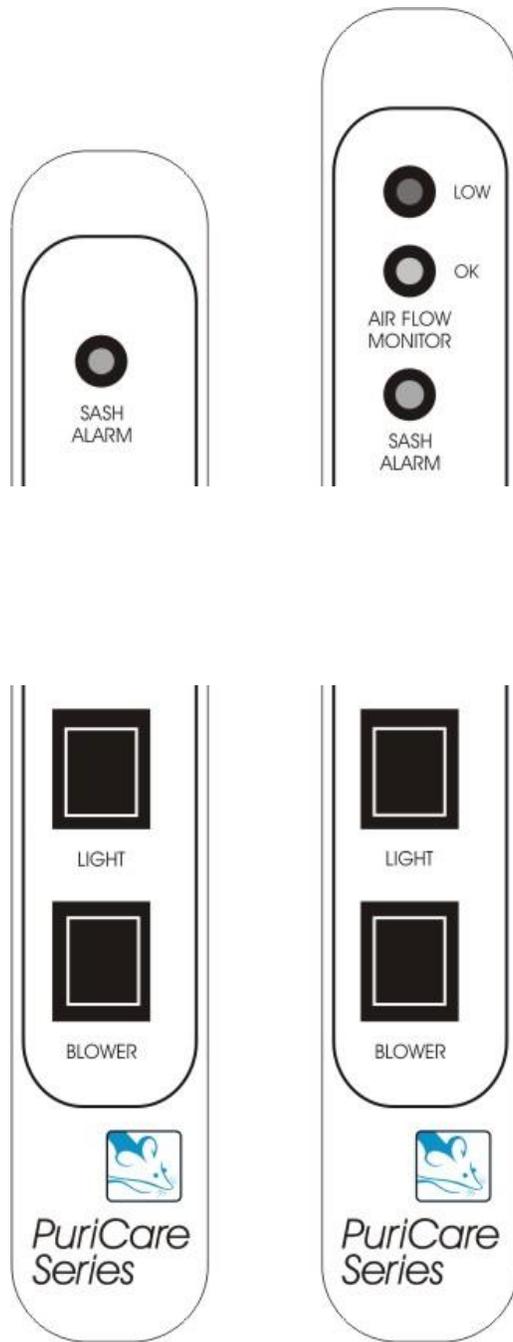


Figure 4-1

The Airflow Alarm

The airflow alarm module is located on the ‘clean’ side of the unit. The alarm monitors the exhaust airflow of the unit. As this is proportional to the inflow of the unit, it indicates the volume of air flowing into the grilles, and gives an indication of the containment of the cabinet. The airflow alarm as shown in Figure 4-2 has three airflow status LED's that indicate if the airflow is safe (green), marginal (yellow) or inadequate (red). When the blowers are turned on, the airflow alarm will power up, and perform a self-diagnosis for approximately three seconds (the audible alarm will sound and all three LED's will light). After the self-diagnosis, the airflow alarm will then display the airflow condition by lighting the appropriate LED.

The airflow alarm’s safe and inadequate airflow LED's are also reported on the control panel on the other side of the unit, as shown in Figure 4-1. For further information on calibrating the airflow alarm, refer to the airflow monitor manual included with this manual.

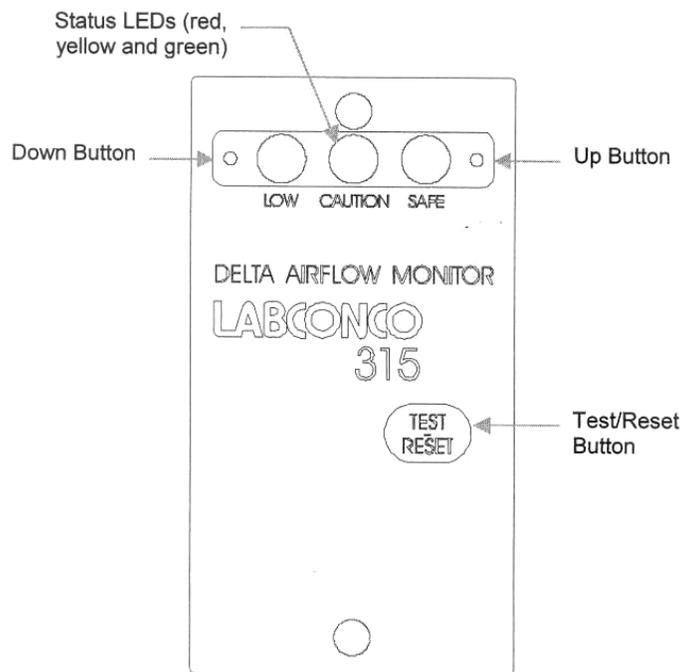


Figure 4-2

Reading the Pressure Gauges

The pressure gauges located on the clean side of the PuriCare report the differential pressure across the upper and lower HEPA filters, respectively. As the HEPA filters or the prefilters load with dirt, the pressure reading on the gauge(s) will increase. It is recommended that the pressure readings on both gauges be recorded periodically.

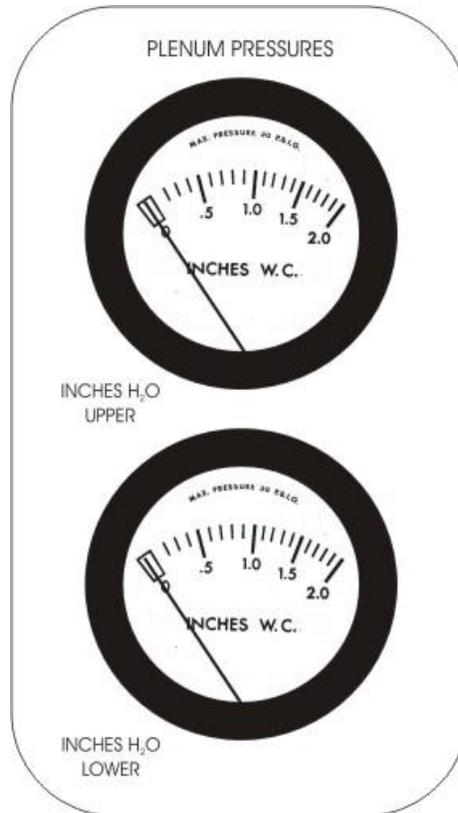


Figure 4-3

Working In Your Dual Sided Biosafety Cabinet

Planning

- Thoroughly understand procedures and equipment required before beginning work.
- For optimal containment arrange for minimal disruptions, such as room traffic or entry into the room while the cabinet is in use.

Start-up

- Ensure the exhaust system blower is operating.
- Turn on fluorescent light and cabinet blower.
- Check the return air grilles for obstructions, and note the pressure gauge readings.
- Allow the cabinet to operate unobstructed for two minutes.
- Wash hands and arms thoroughly with germicidal soap.
- Wear a long sleeved lab coat with knit cuffs and over-the-cuff rubber gloves. Use protective eyewear. Wear a protective mask if appropriate.

Wipe-Down – (start up)

- Lift a sash to its full open position.
- Wipe down the interior surfaces of the cabinet with 70% ethanol, or a suitable disinfectant, and allow it to dry.

Work Techniques

- After loading all the materials that need to be transferred, allow the unit to operate for approximately two minutes.
- Remove the items in the work area.
- Use proper aseptic technique.
- Avoid using techniques or procedures that disrupt the airflow patterns of the cabinet.
- If there is a spill or splatter during use, all objects in the cabinet should be surface decontaminated before removal. Thoroughly disinfect the working area of the cabinet **WHILE IT IS STILL IN OPERATION**. This will prevent the release of contaminants from the cabinet.

Final Purging

- Upon completion of work, the cabinet should be allowed to operate for two to three minutes undisturbed, to purge airborne contaminants from the work area.

Wipe-Down – (completion)

- Wipe down the interior surfaces of the cabinet with 70% ethanol, or a suitable disinfectant, and allow it to dry.
- Periodically lift the work surface and wipe down the area beneath it.
- Inspect the prefilter located beneath the work surface. Replace if necessary.
- Dispose of rubber gloves appropriately, and have lab coat laundered properly.
- Wash hands and arms thoroughly with germicidal soap.

Shutdown

- Turn off the exhaust blower if possible. If the blower cannot be turned off leave at least one sash open to allow for air to flow to the exhaust blower.
- Turn off the cabinet's blowers and lights.

Chapter 5: Maintaining Your PuriCare Dual Sided Biosafety Cabinet

Now that you have an understanding of how to work in the Dual Sided Biosafety Cabinet, we will review the suggested maintenance schedule and the common service operations necessary to maintain it for peak performance.

Note:

Only trained and experienced certification technicians should perform many of the service operations after the cabinet has been properly decontaminated. DO NOT attempt to perform these operations if you are not properly trained.

Routine Maintenance Schedule

Weekly

- Using 70% ethanol, or a suitable disinfectant, surface disinfect the inside of the cabinet.
- Using an appropriate glass cleaner and cloth clean the sash.
- Operate the cabinet blowers, noting the pressure readings in an operational log.
- Lift the work surface and inspect the drip tray screen.

Monthly (or more often as required)

- Using a damp cloth, clean the exterior surfaces of the cabinet, particularly the front, back and top of the unit, to remove any accumulated dust.
- Disinfect and lift the work surface. Surface disinfect the lower plenum with a solution of 70% ethanol, or a suitable disinfectant. Check the drip tray screen for retained materials.
- All weekly activities.

Annually

- Have the cabinet recertified by a qualified certification technician.
- All monthly activities.

Biannually

- Replace the fluorescent lamps.

Service Operations

Work Surface Removal:

1. Lift each section of the work surface up and pull it out of the cabinet work area.

Changing the Fluorescent Lamps:

1. Remove the two screws located on the top of each of the upper front panels.
2. Lift the front panels straight up and away from the cabinet. Remove the fluorescent lamps by rotating them 90 degrees and pulling them straight down and out of their sockets.
3. Install the new lamps by reversing the removal procedure.



THE LAMP(S) IN THIS PRODUCT CONTAIN MERCURY

Manage in accordance with local disposal laws. DO NOT place lamps in trash. Dispose as a hazardous waste. For information regarding safe handling, recycling and disposal, consult www.lamprecycle.org

CETTE LAMPE DANS CE PRODUIT CONTIENT DU MERCURE

Éliminez ou recyclez conformément aux lois applicables. Pour de l'information concernant des pratiques de manipulation sécuritaires et l'élimination sécuritaire et le recyclage, veuillez consulter www.lamprecycle.org

Resetting a Circuit Breaker:

To reset any of the circuit breakers located on the top of the unit near the power supply connection, depress the white button until it sets.

Note:

Only a qualified certifier should perform the service operations listed in the rest of this chapter.

Downflow Velocities

The average downflow velocity for the cabinets should be set at 55 ± 5 FPM. The downflow velocity is adjusted directly by the upper blower speed control located in the electronics module on the top of the unit.

Downflow Velocity Grid Patterns

The downflow velocity test pattern is a grid of three rows of 7 test points per row, yielding a total of 21 test points. A line running from side to side at the center of the work surface and two additional lines 6.0 inches on either side of the centerline define the rows. Three test points on each row are 6.00 inches in from the sidewalls on both sides, and 6.0 inches apart from point to point. A set of points are also in the center of the work surface. All points are read 4.00 inches above the bottom edge of the sash.

Inflow Velocity Calculation

The average inflow velocity for the cabinet is 105 ± 5 FPM, and should be determined by converting the inflow volume to the average inflow velocity. The inflow volume and velocity can be directly adjusted by adjusting the exhaust blower speed control in the electronics module located on the top of the unit.

The inflow volume is measured directly by closing and sealing one sash, and then sealing a direct inflow measuring flow meter to the other side of the unit. When corrected for local conditions, dividing the inflow volume by the opening area will yield the average inflow velocity.

FOR MODEL #s 3230000, 3230020 AND 386000021151

Sash Height (inches)	Avg. Inflow Velocity (FPM)	Work Opening Area (sq. ft.)	Inflow Volume (CFM)
12	105 ± 5	8.03	803-890

Table 5-1

FOR MODEL #s 3230001 AND 3230021

Sash Height (inches)	Avg. Inflow Velocity (FPM)	Work Opening Area (sq. ft.)	Inflow Volume (CFM)
12	105 ± 5	4.02	402-445

Table 5-1a

Electronics Access

Note: Ensure that the cabinet has been disconnected from power before accessing the electronics. Only a qualified certification technician should service the electronics. The junction box houses the speed controls, and their set buttons, the lamp ballasts, and the circuit breakers.

1. Remove the two screws that secure the top of the box using a 5/16" wrench or socket, shown in Figure 5-1.
2. Lift off the top.

Remove these two screws

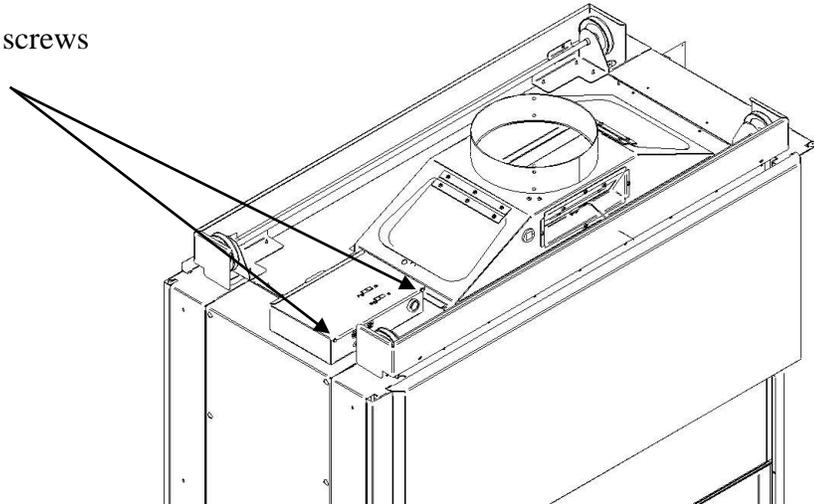


Figure 5-1

Speed Control Adjustment

Note: Only a qualified certification technician should adjust the blower speed controllers. Adjustment of the blower speeds will affect the containment efficiency of the unit.

When the blower speeds are adjusted, a solid-state electronic circuit maintains its set point. Identify the two separate speed controllers on the top of the junction box. The wiring diagram identifies the lower blower's (exhaust), and the upper (supply) blower's controller.

1. During operation, the controllers' display will alternate between the motor PWM signal (a value from 1-100), and the motor speed in RPMs. The higher the PWM signal, the faster the motor will run. Before altering either blower speed, take note of the PWM value and the motors' speeds.
2. Using a small straight bladed screwdriver, slowly increase or decrease the PWM signal to increase or decrease the blower speed, respectively.

NOTE: significant changes in the downflow velocity will impact the inflow velocity. Increasing the downflow will reduce the inflow volume and velocity.

Chapter 6: Troubleshooting

Refer to the following table if your Dual Sided Biosafety Cabinet fails to operate properly. If the suggested corrective actions do not solve your problem, contact Labconco for additional assistance.

PROBLEM	CAUSE	CORRECTIVE ACTION
Cabinet blower and lights won't turn on	Unit not wired into appropriate power	Connect the cabinet into appropriate electrical service.
	Circuit breakers tripped	Reset circuit breakers.
Blower(s) won't turn on but lights work	Blower(s) wiring is disconnected	Inspect blower(s) wiring.
	Blower(s) motor is defective	Replace blower(s) motor.
Cabinet blower turns on but lights don't work	Lamp(s) not installed correctly	Inspect lamp installation.
	Lamp(s) is defective	Replace lamp(s).
	Lamp wiring is disconnected	Inspect lamp wiring.
	Defective lamp ballast	Replace lamp ballast.

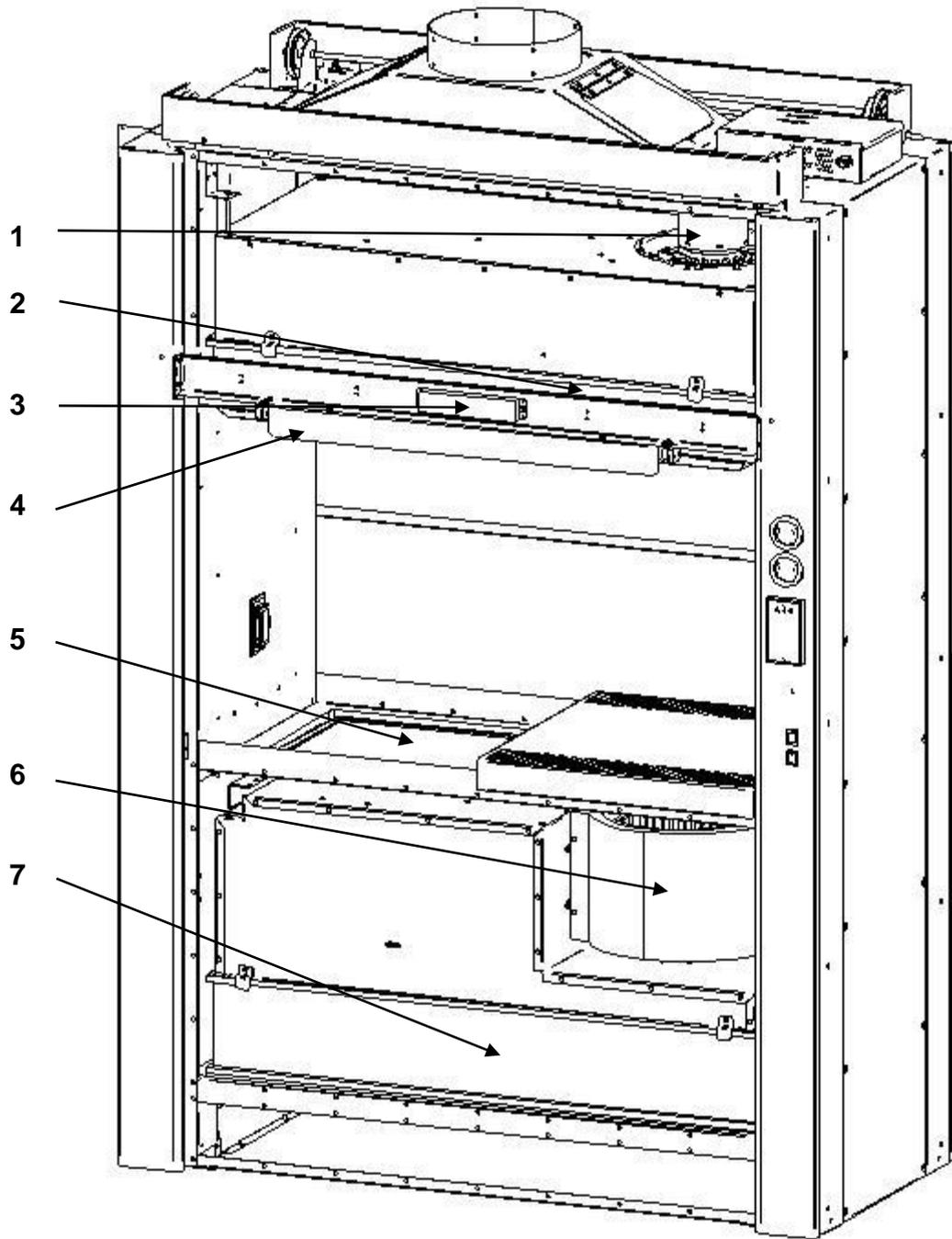
PROBLEM	CAUSE	CORRECTIVE ACTION
Slight increase in pressure reading	HEPA filter loading	The pressure reading will steadily increase as the unit is used.
	Drip tray screen loading	Check the drip tray screen for obstruction(s). Clean if necessary.
	Blockage or restriction under the work surface	Ensure that the plenum beneath the work surface is unobstructed.
	Blockage of the exhaust outlet	Ensure that the exhaust outlet is not blocked or restricted.
Contamination of work in the cabinet	Improper technique or procedure for the cabinet	See “Use of the PuriCare Dual Sided Biosafety Cabinet” in the manual.
	Restriction of the grille – blockage of the exhaust outlet	Ensure that all return air slots, grilles and the exhaust outlet are unobstructed.
	External factors are disrupting the cabinet’s patterns or acting as a source of contamination	See “Installation” section of this manual.
	Cabinet is out of adjustment/HEPA filter(s) are defective	Have cabinet recertified.

Appendix A: Components

Illustration A-1 indicates the location of the following service parts:

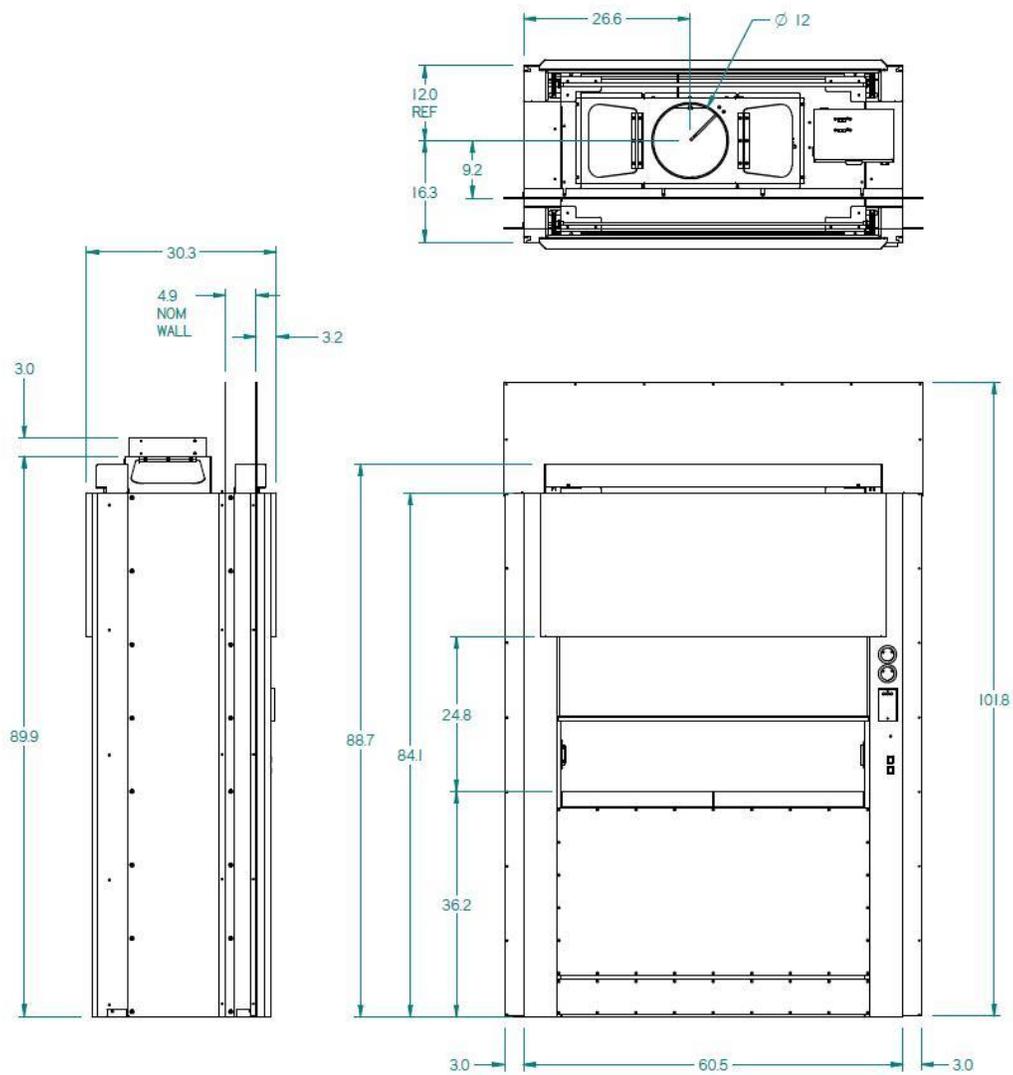
Cabinet Replacement Parts

Item	Quantity	Part No.	Description
1	1	3496501	Upper motor/blower assembly
2	1	3232300	Supply HEPA Filter
3	1	1294000	Ballast, Fluorescent
4	2	9721900	Lamp, Fluorescent
5	1	3234800	Drip tray screen
6	1	3233700	Lower motor/blower assembly
7	1	3232100	Exhaust HEPA Filter



A-1

Appendix B: Dimensions



B-1

Appendix C: Specifications

Electrical Data

Cabinet Model	Electrical Requirements
386000021151, 3230000	115 VAC – 60 Hz, 1 Phase – 30 Amps

Upper Motor Specifications

Cabinet Model	Electrical Requirements
All models	1/2 H.P. Electronically Commutated Motor (ECM) 120 VAC – 50/60 Hz, 7.7 Full Load Amps @115VAC Automatic Thermal Protection

Lower Motor Specifications

Cabinet Model	Electrical Requirements
All models	1 H.P. Electronically Commutated Motor (ECM) 120 VAC – 50/60 Hz, 12.8 Full Load Amps @115VAC Automatic Thermal Protection

Environmental Conditions

- Indoor use only.
- Ambient temperature range: 41° to 104°F (5° to 40°C).
- Maximum relative humidity: 80% for temperatures up to 88°F (31°C), decreasing linearly to 50% relative humidity at 104°F (40°C).
- Main supply voltage fluctuations not to exceed $\pm 10\%$ of the nominal voltage.
- Transient overvoltages according to Installation Categories II (Overvoltage Categories per IEC 1010). Temporary voltage spikes on the AC input line that may be as high as 1500V for 100V and 115V models and 2500V for 230V models are allowed.
- Used in an environment of Pollution degrees 2 (i.e., where normally only non-conductive atmospheres are present). Occasionally, however, a temporary conductivity caused by condensation must be expected, in accordance with IEC 664.

Appendix D: Quick Chart

Model	386000021151, 3230000, 3230020
Downflow (FPM)	50-60
Approximate Settings for New Filters:	
Nominal Supply Air Volume Displacement (CFM)	450
Number of Laskin Nozzles Needed	1
Nominal Exhaust Air Volume Displacement (CFM)	1300
Number of Laskin Nozzles Needed	2
Supply HEPA Filter Dims. (inches)	48x22x3.06
Exhaust HEPA Filter Dims (inches)	48x22x8.06
Fluorescent Light(s)	2 each F25T8/TL741

Model	3860020, 3230021
Downflow (FPM)	50-60
Approximate Settings for New Filters:	
Nominal Supply Air Volume Displacement (CFM)	450
Number of Laskin Nozzles Needed	1
Nominal Exhaust Air Volume Displacement (CFM)	900
Number of Laskin Nozzles Needed	2
Supply HEPA Filter Dims. (inches)	48x22x3.06
Exhaust HEPA Filter Dims (inches)	48x22x8.06
Fluorescent Light(s)	2 each F25T8/TL741

Use the downflow velocity test grid as described in this manual when checking the downflow air velocity.